

Inspection Report with SI&A Data

Structure Description: 1020.01 Foot - 12 Span Steel continuous Stringer/Multi-beam or Girder

2 District: 05 **3 County:** Jefferson **16 Latitude:** 38°16'31.00" **7 Longitude:** 85°47'27.00"

7 Facility Carried: I-64

Milepoint: 0.020

6A Feature Intersected: CONRAIL AND 26,27TH STS

9 Location: .4M E OF K-ITRR OHIO RV B

| | |
|-------------------|---|
| NBI | X |
| Element | X |
| Fracture Critical | X |
| Underwater | |
| Special | |

Structure Description: 1020.01 Foot - 12 Span Steel continuous Stringer/Multi-beam or Girder

| NBI CONDITION RATINGS | | | |
|---------------------------|---|----------------------------|------|
| 58 Deck: | 7 | 61 Channel: | N |
| 59 Superstructure: | 6 | 62 Culvert: | N |
| 60 Substructure: | 7 | Sufficiency Rating: | 86.8 |

| GEOMETRIC DATA | | |
|-----------------------------------|--|----------------------|
| 48 Max Length Span: | | 133.000 ft |
| 49 Structure Length: | | 1,020.084 ft |
| 32 Approach Roadway: | | -3.281 ft |
| 33 Median: | | (3) Closed w/Barrier |
| 34 Skew: | | 0° |
| 35 Flare: | | No Flare |
| 50A Curb/Sidewalk Width L: | | 0.000 ft |
| 50B Curb/Sidewalk Width R: | | 0.000 ft |
| 47 Horiz. Clearance: | | 44.291 ft |
| 51 Width Curb to Curb: | | -3.281 ft |
| 52 Width Out to Out: | | 94.250 ft |
| 48 Max Length Span: | | 133.000 ft |

| DESIGN | |
|-------------------------------------|----------------------------|
| Substandard: | No |
| Fracture Critical: | Yes |
| 43A Main Span Material: | (4) Steel Continuous |
| 43B Main Span Design: | (02) Stringer / Girder |
| 45 Number of Spans Main: | 12 |
| 44A Approach Span Material: | Not Applicable |
| 44B Approach Span Design: | Not Applicable |
| 46 Number of Approach Spans: | 0 |
| 107 Deck Type: | (1) Concrete-Cast-in-Place |
| 108A Wearing Surface: | (6) Bituminous |
| 108B Membrane: | (0) None |
| 108C Deck Protection: | (0) None |
| Overlay Y/N: | Yes |
| Overlay Type: | HT Poly |
| Overlay Thickness: | 1.500 in |
| Overlay Date: | 2007 |

| ADMINISTRATIVE | | |
|---------------------------------------|--|----------------------------|
| 27 Year Built: | | 1970 |
| 106 Year Reconstructed: | | 0 |
| 42A Type of Service On: | | (1) Highway |
| 42B Type of Service Under: | | (4) Hyw - RR |
| 37 Historical Significance: | | (5) Not Eligible |
| 21 Maintenance Responsibility: | | (01) State Hwy Agency |
| 22 Owner: | | (01) State Hwy Agency |
| 101 Parallel Structure: | | (N) No II Structure Exists |
| 52 Width Out to Out: | | 94.250 ft |

| APPRAISAL | |
|-------------------------------------|--------------------------|
| 36A Bridge Railings: | (1) Meets Standards |
| 36B Transitions | (1) Meets Standards |
| 36C Approach Guardrail: | (1) Meets Standards |
| 36D Approach Guardrail Ends: | (1) Meets Standards |
| 71 Waterway Adequacy: | (N) Not Applicable |
| 72 Approach Alignment: | (8) Equal Desirable Crit |
| 113 Scour Critical: | (N) Not over Waterway |
| Recommended Scour Critical: | (N) Not over Waterway |

| CLEARANCES | | |
|--|--|------------------------------|
| 10 Vert. Clearance: | | 23.419 ft |
| 53 Min. Vert. Clearance Over: | | 99.999 ft |
| 54A Vert. Under Reference: | | (H) Hwy beneath struct. |
| 54B Min. Vert. Underclearance: | | 22.999 ft |
| 55A Lateral Under Reference: | | (R) Railroad beneath struct. |
| 55B Min. Lat. Underclearance R: | | 11.155 ft |
| 56 Min. Lat. Underclearance L: | | 0.000 ft |
| 10 Vert. Clearance: | | 99.999 ft |

| LOAD RATINGS | |
|---------------------------------|----------------------|
| 63 Operating Type: | (1) Load Factor (LF) |
| 64 Operating Rating: | 60.0 tons |
| 65 Inventory Type: | (1) Load Factor (LF) |
| 66 Inventory Rating: | 36.0 tons |
| Truck Capacity Type I: | tons |
| Truck Capacity Type II: | tons |
| Truck Capacity Type III: | tons |
| Truck Capacity Type IV: | tons |

| POSTINGS | |
|-----------------------------------|--------------------------|
| 41 Posting Status: | (A) Open, No Restriction |
| Signs Posted Cardinal: | No |
| Signs Posted Non-Cardinal: | No |
| Field Postings Gross: | tons |
| Field Postings Type I: | tons |
| Field Postings Type II: | tons |
| Field Postings Type III: | tons |
| Field Postings Type IV: | tons |

Inspection Report with SI&A Data

| 12: Re Concrete Deck | | | | | | | | | |
|--|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| SQ.FT | 96,143 | 95,174 | 99% | 961 | 1% | 8 | 0% | 0 | 0% |
| Deck was overlaid with Rosphalt in 2007 - top of the deck cannot be seen. The bottom of the deck has minor cracks, some with efflorescence. The bottom of the deck just west of Pier 9 has a spall with exposed rebar. The bottom of the east span has areas of delamination greater than 6 inch diameter near the centerline joint. | | | | | | | | | |

| 510: Wearing Surfaces | | | | | | | | | |
|--|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| SQ.FT | 90,447 | 89,966 | 99% | 481 | 1% | 0 | 0% | 0 | 0% |
| Deck was overlaid with Rosphalt in 2007. Rosphalt has exposed aggregate in the driving lanes, but appears to be fully effective at protecting the deck. Rosphalt has some small areas of scattered nicks/gouges that appear to be from impact (estimated at 0.5% of the surface, but that may be a bit large). The armored edge and the top of the backwall at the east end of the westbound side has moderate to fairly severe impact damage from snowplows. Dirt/debris littering the shoulders - northwest corner of the bridge has lots of dirt build-up (worst area). | | | | | | | | | |

| 107: Steel Opn Girder/Beam | | | | | | | | | |
|--|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| FT | 10,469 | 9,434 | 90% | 1,020 | 10% | 15 | 0% | 0 | 0% |
| Beams have welds that vary in quality from good to poor and intersecting welds are typically scattered throughout the beams. Longitudinal beams have some section loss under joints and light freckled rust for approximately 10% of their length. Cross girders at Piers 2, 3, and 4 have about 5 feet each of rusted areas with minor section loss under the centerline joint. | | | | | | | | | |

| 515: Steel Protective Coating | | | | | | | | | |
|---|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| FT | 3,190.95 | 0 | 0% | 2,871.83 | 90% | 319.13 | 10% | 0 | 0% |
| Paint is mostly substantially effective, but has areas of only limited effectiveness. The paint on this structure (as well as the remainder of the paint on the Riverside Expressway bridges) is an overcoat system that is very near the end of its life cycle - planning for new paint needs to begin ASAP. | | | | | | | | | |

Inspection Report with SI&A Data

161: Stl Pin Pin/Han both

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| EACH | 10 | 0 | 0% | 10 | 100% | 0 | 0% | 0 | 0% |

The wind locks on bottom and top flanges of suspended beams have section loss/bending/deterioration. Some assemblies typically have contact between girder web and hanger plate and some have minor section loss behind hanger plates. Some hangers, pins, and nuts have minor nicks/gouges that appear to be from construction. The presence of fretting corrosion at some assemblies indicate that the connections are allowing movement.

515: Steel Protective Coating

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| EACH | 0.93 | 0 | 0% | 0 | 0% | 0.93 | 100% | 0 | 0% |

Calcium sulfonate paint utilized on the pin and hangers during the 2007 rehab project provides only limited effectiveness at best.

205: Re Conc Column

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| EACH | 40 | 29 | 73% | 9 | 23% | 2 | 5% | 0 | 0% |

Pier 1 Column 3 has a minor spall near the ground. Pier 2 Column 1 has minor deterioration and Column 2 has a minor spall with exposed resteel near the top. Pier 3 Columns 2 and 3 have minor spalls. Pier 4 Column 2 has minor deterioration near the top. Pier 5 Column 3 has cracking with some delamination.

215: Re Conc Abutment

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| FT | 189 | 141 | 75% | 48 | 25% | 0 | 0% | 0 | 0% |

Abutments have minor cracks, deterioration, and spalls. Abutment backwalls have vertical and random cracks.

Inspection Report with SI&A Data

| 234: Re Conc Pier Cap | | | | | | | | | |
|---|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| FT | 748 | 680 | 91% | 45 | 6% | 23 | 3% | 0 | 0% |
| <p>Some pier caps have minor to moderate cracks and deterioration - Piers 5 and 8 mostly. Minor to moderate cracking and/or spalling of some pedestals. Pier 5 cap has a minor spall with exposed rebar near the south end on the west face. Pier 8 pedestal for Beam A is spalled with exposed rebar on the west face.</p> | | | | | | | | | |

| 300: Strip Seal Exp Joint | | | | | | | | | |
|---|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| FT | 355 | 285 | 80% | 70 | 20% | 0 | 0% | 0 | 0% |
| <p>All joints replaced in 2007. Strip seals have minor dirt/debris build-up in them and concrete adjacent to the armored edges has minor cracks/deterioration. Pier 5 and End Bent 2 joints have minor damage from snowplows.</p> | | | | | | | | | |

| 302: Compressn Joint Seal | | | | | | | | | |
|--|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| FT | 89 | 49 | 55% | 15 | 17% | 25 | 28% | 0 | 0% |
| <p>All joints replaced in 2007. Compression seal at the west bridge end (End Bent 1) has minor dirt/debris build-up and concrete adjacent to armored edges has minor cracks/deterioration. The compression seal in the eastbound lanes has dropped down in places.</p> | | | | | | | | | |

| 311: Moveable Bearing | | | | | | | | | |
|---|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| EACH | 85 | 0 | 0% | 85 | 100% | 0 | 0% | 0 | 0% |
| <p>Moveable bearings have minor surface rust.</p> | | | | | | | | | |

Inspection Report with SI&A Data

| 515: Steel Protective Coating | | | | | | | | | |
|--|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| EACH | 7.9 | 0 | 0% | 4.18 | 53% | 3.72 | 47% | 0 | 0% |
| <p>Paint of bearings at the end bents, Pier 5, and Pier 8 has limited effectiveness - at other bearings it is still substantially effective.</p> | | | | | | | | | |

| 313: Fixed Bearing | | | | | | | | | |
|---|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| EACH | 43 | 0 | 0% | 41 | 95% | 2 | 5% | 0 | 0% |
| <p>Bearings appear to have been reset, cleaned, and painted as part of repairs performed in 2007. Fixed bearings at Piers 3 and 4 have rust with minor section loss under the centerline joint.</p> | | | | | | | | | |

| 515: Steel Protective Coating | | | | | | | | | |
|--|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| EACH | 3.99 | 0 | 0% | 3.99 | 100% | 0 | 0% | 0 | 0% |
| <p>Paint at the fixed bearings is substantially effective.</p> | | | | | | | | | |

| 331: Re Conc Bridge Railing | | | | | | | | | |
|--|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
| FT | 4,080 | 3,629 | 89% | 401 | 10% | 50 | 1% | 0 | 0% |
| <p>Exterior bridge railing was retrofitted to meet current standards in 2007. Median bridge railing repaired and masonry coated in 2007. Concrete barrier wall has minor vertical cracks, some minor spalls with exposed rebar, and a few scrapes from vehicle impact.</p> | | | | | | | | | |

Inspection Report with SI&A Data

802: Drainage Sys

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| EACH | 1 | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 100% |

Drainage system is clogged up and/or rusted out.

807: Stl Cross Girder

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| (LF) | 269 | 254 | 94% | 0 | 0% | 15 | 6% | 0 | 0% |

Steel cross girders have expansive rust with some minor section loss under the centerline longitudinal joint. (This 269 feet of girder is also included in Element 107.)

515: Steel Protective Coating

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| (LF) | 81.99 | 0 | 0% | 77.42 | 94% | 4.57 | 6% | 0 | 0% |

Paint on the cross girders is substantially effective, except under the centerline joint where it now has only limited effectiveness.

851: Transitions

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| (EA) | 1 | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 100% |

The armored edge and the top of the backwall at the east end of the westbound side has moderate to fairly severe impact damage from snowplows - the approach at this location needs a large asphalt wedge.

Inspection Report with SI&A Data

852: Drains

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| (EA) | 1 | 0 | 0% | 0 | 0% | 1 | 100% | 0 | 0% |

Drains connected to a drainage system are stopped up.

857: Embankment Erosion

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| (EA) | 1 | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 100% |

The east abutment (End Bent 2) has fairly severe erosion at the south side of it and in front of it near the south side - the slope protection is undermined approximately 4 feet. Minor erosion in front of the west abutment (End Bent 1). Moderate to severe roadway embankment erosion on the right side of the eastbound lane embankment approximately 40 feet east of the east bridge end.

859: Vegetation

| Units | Total Qty | Qty. St. 1 | % in 1 | Qty. St. 2 | % in 2 | Qty. St. 3 | % in 3 | Qty. St. 4 | % in 4 |
|-------|-----------|------------|--------|------------|--------|------------|--------|------------|--------|
| (EA) | 1 | 0 | 0% | 0 | 0% | 1 | 100% | 0 | 0% |

Trees and brush around the structure need to be cut, sprayed, and removed.

Inspection Report with SI&A Data

STRUCTURE NOTES

-Since this bridge has fracture critical pier-girders and Pier-Girder 2 has pin and hanger assemblies, the decision was made that bridge component numbering would be designated as per original plans (contrary to our Kentucky Bridge Inspection Procedures Manual). Therefore bridge component numbering in inspections prior to 2012 may vary from newer inspections.

-In 2007, deck received 1.5" Rosphalt overlay (high temp.) and joint replacement.

-To access, see contact information for Norfolk Southern RR (needs 3 days notice; no work on Friday):

- Carlene Ward, National Contact at (865) 521-1481
- Ian Krispin, Regional Contact at (217) 619-4551
- Jim Kovats, Local Contact at (502) 442-6991

-In-depth inspection was performed on this structure in August of 1989.

- Element "107 Steel Painted Open Girder/Beam" includes 269 feet of steel cross girder. These steel cross girders are fracture critical and are located at Piers 2, 3, and 4. Central Office instructed us to code them like this.

-This structure has longitudinal stiffeners. Shop drawings are in the file.

INSPECTION NOTES

Terry King, Natalie House-Lewis, and James Whitehouse performed the fracture critical portion of the bridge inspection on July 21 and 22, 2015. Access for inspection of the fracture critical cross girders and the pin and hanger assemblies was obtained with the District's self propelled man lift. The fracture critical portion of the inspection could possibly be completed in one day, but two days were required this cycle due to having to wait for the rail line to be cleared the first morning and attending a meeting after lunch on the second day. Norfolk Southern personnel provided RR "flagging" while inspection was performed on the portions of the cross girders located above the RR tracks.

Terry King and Taylor Hancock performed the routine portion of the inspection on 7-23-2015.

The fracture critical inspection included hands-on visual inspection of the three (3) cross girders as well as the pin & hanger assemblies on the west face of the Pier 2 cross girder. Magnetic-particle testing equipment was available for use, but was not required.

The fracture critical cross girders were found to be in generally satisfactory condition, with only minor deterioration/defects. The cross girders are rusting in places and have experienced some minor section loss below the longitudinal deck joint.

The pin and hanger assemblies have minor pack rust and deterioration in places. Some pin and hanger locations also exhibit minor section loss, although most areas of section loss have been painted over. The longitudinal girders have minor to moderate section loss to the web/lower flange near the pin and hanger assemblies - with Beam A having the worst section loss. Steel cover plates that prevented good visual inspection of the pin and hangers on the exterior of the fascia girders were removed at the end of the 2013 inspection - after inspecting this cycle, touch-up painting was completed at these locations.

WORK

| | |
|----------------|---|
| Action: | - |
|----------------|---|